**Topic 2 - Cells – Study Guide**

**2.1 Cell theory (3)**

Can you outline the cell theory? What kinds of observations lead to this theory?

Can you compare relative sizes of molecules, cell membrane thickness, viruses, bacteria, organelles and cells, using the appropriate SI unit.

Can you calculate the actual size of specimens in images of known magnification? What about the linear magnification of drawings?

Do you know how surface area and volume limit cell size?

Can you explain the difference between the different kinds of cells in multicellular organisms?

Do you know the importance of stem cells? Can you outline one therapeutic use of stem cells?

**2.2 Prokaryotic cells (1)**

Can you draw and label a diagram of E. coli? Do you know the functions of each of the structures labeled?

Can you identify the same structures in electron micrographs?

Do you know how prokaryotic cells divide?

**2.3 Eukaryotic cells (3)**

Can you draw and label a diagram of a liver cell? Do you know the functions of each of the structures labeled?

Can you identify the same structures in electron micrographs?

Do you know the differences between prokaryotic and eukaryotic cells?

Can you cite three differences between plant and animal cells?

Do you know the importance of extracellular components?

**2.4 Membranes (3)**

Can you draw and label the plasma membrane?

Do you understand the hydrophobic and hydrophilic properties of the membrane?

Can you list the functions of membranes?

Can you define diffusion and osmosis?

Can you explain two examples of passive transport?

Can you explain active transport?

Do you know how vesicles are formed within cells and transported out of it?

Do you know the importance of membrane fluidity?

**2.5 Cell division (2)**

Can you outline what happens during interphase (G1, S, G2), mitosis and cytokinesis?

Do you know what tumors are?

Can you list with details what occurs in the four phases of mitosis?

Do you know the importance of mitosis?